

**Calendar No. 310**

106TH CONGRESS  
1ST SESSION

**S. 935**

**[Report No. 106-179]**

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**A BILL**

To amend the National Agricultural Research, Extension, and Teaching Policy Act of 1977 to authorize research to promote the conversion of biomass into biobased industrial products, and for other purposes.

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OCTOBER 8, 1999

Reported with an amendment

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IN THE SENATE OF THE UNITED STATES

APRIL 30, 1999

Mr. LUGAR (for himself, Mr. CHAFEE, Mr. HARKIN, Mr. JEFFORDS, Mr. MURKOWSKI, Mr. ALLARD, Mr. DASCHLE, Mr. DOMENICI, Mr. KERREY, Mr. LEAHY, Mr. LIEBERMAN, Mr. CRAIG, Mr. GRASSLEY, Mr. JOHNSON, Mr. FITZGERALD, Mr. DURBIN, Mr. KERRY, Mr. BAYH, Mr. BURNS, and Mr. BINGAMAN) introduced the following bill; which was read twice and referred to the Committee on Agriculture, Nutrition, and Forestry

OCTOBER 8, 1999

Reported by Mr. LUGAR, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

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**A BILL**

To amend the National Agricultural Research, Extension, and Teaching Policy Act of 1977 to authorize research to promote the conversion of biomass into biobased industrial products, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “National Sustainable  
3 Fuels and Chemicals Act of 1999”.

4 **SEC. 2. FINDINGS.**

5 Congress finds that—

6 (1) conversion of biomass into biobased indus-  
7 trial products offers outstanding potential for benefit  
8 to the national interest through improved strategie  
9 security and balance of payments, healthier rural  
10 economies, improved environmental quality, near-  
11 zero net greenhouse gas emissions, technology ex-  
12 port, and sustainable resource supply;

13 (2)(A) biomass is widely available at prices that  
14 are competitive with low cost petroleum; and

15 (B) the key technical challenge to be overcome  
16 in order for biobased industrial products to be cost  
17 competitive is reducing the cost of technology for  
18 converting biomass into desired biobased industrial  
19 products;

20 (3) biobased fuels, such as ethanol, have the  
21 clear potential to be sustainable, low cost, and high  
22 performance fuels that are compatible with both cur-  
23 rent and future transportation systems and provide  
24 near zero net greenhouse gas emissions;

25 (4) biobased chemicals—

1           (A) can provide functional replacements  
2           for essentially all organic chemicals that are  
3           currently derived from petroleum; and

4           (B) have the clear potential for environ-  
5           mentally benign product life cycles;

6           (5) many biomass feedstocks suitable for indus-  
7           trial processing show the clear potential for sustain-  
8           able production, in some cases resulting in improved  
9           soil fertility and carbon sequestration;

10          (6)(A) grain processing mills are biorefineries  
11          that produce a diversity of useful food, chemical,  
12          feed, and fuel products; and

13          (B) technologies that result in further diver-  
14          sification of the range of value-added biobased in-  
15          dustrial products can meet a key need for the grain  
16          processing industry;

17          (7)(A) cellulosic feedstocks are attractive be-  
18          cause of their low cost and widespread availability;  
19          and

20          (B) research resulting in cost-effective tech-  
21          nology to overcome the recalcitrance of cellulosic bio-  
22          mass would allow biorefineries to produce fuels and  
23          bulk chemicals on a very large scale, with a commen-  
24          surately large realization of the benefit described in  
25          paragraph (1);

1           (8) research into the fundamentals to under-  
2           stand important mechanisms of biomass conversion  
3           processes can be expected to accelerate the applica-  
4           tion and advancement of biomass processing tech-  
5           nology by—

6                   (A) increasing the confidence and speed  
7                   with which new technologies can be scaled up;  
8                   and

9                   (B) giving rise to processing innovations  
10                  based on new knowledge;

11           (9) the utility of biotechnology allows the design  
12           of feedstocks that will meet future needs more effec-  
13           tively;

14           (10)(A) because of the relatively short-term  
15           time horizon characteristic of private sector invest-  
16           ments, and because many benefits of biomass proc-  
17           essing are in the national interest, it is appropriate  
18           for the Federal Government to provide  
19           precommercial investment in fundamental and re-  
20           search-driven innovation in the biomass processing  
21           area; and

22                   (B) such an investment would provide a valu-  
23           able complement to ongoing and past governmental  
24           support in the biomass processing area; and

1           (11) several prominent studies, including stud-  
 2           ies by the President’s Council of Advisors on Science  
 3           and Technology and the National Research Council,  
 4           support the potential for large research-driven ad-  
 5           vances in technologies for production of biobased in-  
 6           dustrial products as well as associated benefits.

7   **SEC. 3. CONVERSION OF BIOMASS INTO BIOBASED INDUS-**  
 8           **TRIAL PRODUCTS.**

9           Title XIV of the National Agricultural Research, Ex-  
 10          tension, and Teaching Policy Act of 1977 (7 U.S.C. 3101  
 11          et seq.) is amended by adding at the end the following:

12   **“Subtitle N—Conversion of Bio-**  
 13          **mass Into Biobased Industrial**  
 14          **Products**

15   **“SEC. 1490. DEFINITIONS.**

16          “In this subtitle:

17               “(1) **ADVISORY COMMITTEE.**—The term ‘Advi-  
 18               sory Committee’ means the Sustainable Fuels and  
 19               Chemicals Technical Advisory Committee established  
 20               by section 1490C.

21               “(2) **BIOBASED INDUSTRIAL PRODUCT.**—The  
 22               term ‘biobased industrial product’ means any power,  
 23               fuel, feed, chemical product, or other consumer good  
 24               derived from biomass.

1           “(3) BIOMASS.—The term ‘biomass’ means any  
 2           organic matter that is available on a renewable or  
 3           recurring basis, including plants, trees, grasses, agri-  
 4           cultural crops and residues, wood and wood residues,  
 5           municipal waste, animal waste and residues, and  
 6           aquatic plants.

7           “(4) BOARD.—The term ‘Board’ means the  
 8           Sustainable Fuels and Chemicals Board established  
 9           by section 1490B.

10           “(5) INITIATIVE.—The term ‘Initiative’ means  
 11           the Sustainable Fuels and Chemicals Research Ini-  
 12           tiative established under section 1490D.

13           “(6) POINT OF CONTACT.—The term ‘point of  
 14           contact’ means a point of contact designated under  
 15           section 1490A(d).

16   **“SEC. 1490A. COOPERATION AND COORDINATION IN SUS-**  
 17                   **TAINABLE FUELS AND CHEMICALS RE-**  
 18                   **SEARCH.**

19           “(a) IN GENERAL.—The Secretary of Agriculture  
 20           and the Secretary of Energy shall cooperate with respect  
 21           to, and coordinate, policies and procedures that promote  
 22           research and development leading to the production of  
 23           biobased industrial products.

1       “(b) PURPOSE.—The purpose of the cooperation and  
2 coordination shall be to promote research and development  
3 related to—

4           “(1) understanding the key mechanisms under-  
5 lying the recalcitrance of biomass for conversion into  
6 biobased industrial products, including the use of ag-  
7 ricultural crops for conversion into biobased indus-  
8 trial products; and

9           “(2) advanced technologies that will result in  
10 large-scale commercial production of low cost  
11 biobased industrial products.

12       “(c) AREAS.—In carrying out this subtitle, the Sec-  
13 retary of Agriculture and the Secretary of Energy shall  
14 promote research and development to—

15           “(1) advance the availability and widespread  
16 use of energy efficient, economically competitive, and  
17 environmentally sound biobased industrial products  
18 in a manner that is consistent with the goals of the  
19 United States relating to sustainable and secure  
20 supplies of food, chemicals, and fuel;

21           “(2) ensure full consideration of Federal land  
22 and land management programs as potential feed-  
23 stock resources for biobased industrial products; and

1           “(3) assess the environmental, economic, and  
 2           social impact of production of biobased industrial  
 3           products from biomass on a large scale.

4           “(d) POINTS OF CONTACT.—

5           “(1) IN GENERAL.—To coordinate research and  
 6           development programs and activities relating to  
 7           biobased industrial products that are carried out by  
 8           their respective Departments—

9           “(A) the Secretary of Agriculture shall  
 10          designate, as the point of contact for the De-  
 11          partment of Agriculture, an officer of the De-  
 12          partment of Agriculture appointed by the Presi-  
 13          dent to a position in the Department before the  
 14          date of the designation, by and with the advice  
 15          and consent of the Senate; and

16          “(B) the Secretary of Energy shall des-  
 17          ignate, as the point of contact for the Depart-  
 18          ment of Energy, an officer of the Department  
 19          of Energy appointed by the President to a posi-  
 20          tion in the Department before the date of the  
 21          designation, by and with the advice and consent  
 22          of the Senate.

23          “(2) DUTIES.—The points of contact shall  
 24          jointly—

1           “(A) assist in arranging interlaboratory  
2           and site-specific supplemental agreements for  
3           research, development, and demonstration  
4           projects relating to biobased industrial prod-  
5           ucts;

6           “(B) serve as cochairpersons of the Board;

7           “(C) administer the Initiative; and

8           “(D) respond in writing to each rec-  
9           ommendation of the Advisory Committee made  
10          under section 1490C(c)(2).

11   **“SEC. 1490B. SUSTAINABLE FUELS AND CHEMICALS BOARD.**

12          “(a) ESTABLISHMENT.—There is established the  
13   Sustainable Fuels and Chemicals Board to coordinate pro-  
14   grams within and among departments and agencies of the  
15   Federal Government for the purpose of promoting the use  
16   of biobased industrial products by—

17          “(1) maximizing the benefits deriving from  
18   Federal grants and assistance; and

19          “(2) bringing coherence to Federal planning.

20          “(b) MEMBERSHIP.—The Board shall consist of:

21          “(1) The point of contact of the Department of  
22   Agriculture designated under section  
23   1490A(d)(1)(A), who shall serve as cochairperson of  
24   the Board.

1           ~~“(2) The point of contact of the Department of~~  
 2           ~~Energy designated under section 1490A(d)(1)(B),~~  
 3           ~~who shall serve as cochairperson of the Board.~~

4           ~~“(3) A senior officer of each of the following~~  
 5           ~~agencies who is appointed by the head of the agency~~  
 6           ~~and who has a rank that is equivalent to the points~~  
 7           ~~of contact:~~

8                     ~~“(A) The Department of the Interior.~~

9                     ~~“(B) The Environmental Protection Agen-~~  
 10                    ~~cy.~~

11                    ~~“(C) The National Science Foundation.~~

12                    ~~“(D) The Office of Science and Technology~~  
 13                    ~~Policy.~~

14           ~~“(4) At the option of the Secretary of Agri-~~  
 15           ~~culture and the Secretary of Energy, other members~~  
 16           ~~appointed by the Secretaries (after consultation with~~  
 17           ~~members described in paragraphs (1) through (3)).~~

18           ~~“(e) DUTIES.—The Board shall—~~

19                    ~~“(1) coordinate research, development, and~~  
 20           ~~demonstration activities relating to biobased indus-~~  
 21           ~~trial products—~~

22                    ~~“(A) between the Department of Agri-~~  
 23                    ~~culture and the Department of Energy; and~~

24                    ~~“(B) with other departments and agencies~~  
 25                    ~~of the Federal Government; and~~

1           “(2) provide recommendations to the points of  
2           contact concerning administration of this subtitle.

3           “(d) FUNDING.—Each agency represented on the  
4 Board is encouraged to provide funds for any purpose  
5 under this subtitle.

6           “(e) MEETINGS.—The Board shall meet at least  
7 quarterly to enable the Board to carry out the duties of  
8 the Board under subsection (e).

9   **“SEC. 1490C. SUSTAINABLE FUELS AND CHEMICALS TECH-**  
10           **NICAL ADVISORY COMMITTEE.**

11          “(a) ESTABLISHMENT.—There is established the  
12 Sustainable Fuels and Chemicals Technical Advisory  
13 Committee to—

14           “(1) advise the Secretary of Agriculture and the  
15 Secretary of Energy concerning—

16           “(A) the technical focus and direction of  
17 requests for proposals issued under the Initia-  
18 tive; and

19           “(B) procedures for reviewing the pro-  
20 posals;

21           “(2) facilitate consultations and partnerships  
22 among Federal agencies, agricultural producers, in-  
23 dustry, consumers, the research community, and  
24 other interested groups to carry out program activi-  
25 ties relating to the Initiative; and

1           ~~“(3) evaluate and perform strategic planning on~~  
 2           ~~program activities relating to the Initiative.~~

3           ~~“(b) MEMBERSHIP.—The Committee shall consist of~~  
 4           ~~the following members appointed by the points of contact:~~

5           ~~“(1) An individual affiliated with the biobased~~  
 6           ~~industrial products industry.~~

7           ~~“(2) An individual affiliated with a college or~~  
 8           ~~university who has expertise in biobased industrial~~  
 9           ~~products.~~

10          ~~“(3) 2 prominent engineers or scientists who~~  
 11          ~~have expertise in biobased industrial products.~~

12          ~~“(4) An individual affiliated with a commodity~~  
 13          ~~trade association.~~

14          ~~“(5) An individual affiliated with an environ-~~  
 15          ~~mental or conservation organization.~~

16          ~~“(6) At the option of the points of contact,~~  
 17          ~~other members.~~

18          ~~“(c) DUTIES.—The Advisory Committee shall—~~

19          ~~“(1) advise the points of contact with respect to~~  
 20          ~~the Initiative; and~~

21          ~~“(2) evaluate whether, and make recommenda-~~  
 22          ~~tions in writing to the Board to ensure that—~~

23                 ~~“(A) funds authorized for the Initiative are~~  
 24                 ~~distributed and used in a manner that is con-~~  
 25                 ~~sistent with the goals of the Initiative;~~

1           “(B) the points of contact are funding pro-  
 2           posals under this subtitle that are selected on  
 3           the basis of merit, as determined by an inde-  
 4           pendent panel of scientific and technical peers;  
 5           and

6           “(C) activities under this subtitle are ear-  
 7           ried out in accordance with this subtitle.

8           “(d) MEETINGS.—The Advisory Committee shall  
 9           meet at least quarterly to enable the Advisory Committee  
 10          to carry out the duties of the Advisory Committee under  
 11          subsection (c).

12       **“SEC. 1490D. SUSTAINABLE FUELS AND CHEMICALS RE-**  
 13       **SEARCH INITIATIVE.**

14       “(a) IN GENERAL.—The Secretary of Agriculture  
 15       and the Secretary of Energy, acting through their respec-  
 16       tive points of contact and in consultation with the Board,  
 17       shall establish and carry out a Sustainable Fuels and  
 18       Chemicals Research Initiative under which competitively-  
 19       awarded grants, contracts, and financial assistance are  
 20       provided to, or entered into with, eligible entities to carry  
 21       out research on biobased industrial products.

22       “(b) PURPOSES.—The purposes of grants, contracts,  
 23       and assistance under this section shall be to—

24               “(1) stimulate collaborative activities by a di-  
 25               verse range of experts in all aspects of biomass proc-

1       essing for the purpose of conducting fundamental  
 2       and innovation-targeted research and technology de-  
 3       velopment;

4           “(2) enhance creative and imaginative ap-  
 5       proaches toward biomass processing that will serve  
 6       to develop the next generation of advanced tech-  
 7       nologies making possible low cost biobased industrial  
 8       products;

9           “(3) strengthen the intellectual resources of the  
 10      United States through the training and education of  
 11      future scientists, engineers, managers, and business  
 12      leaders in the field of biomass processing; and

13          “(4) promote integrated research partnerships  
 14      among colleges, universities, national laboratories,  
 15      Federal research agencies, and the private sector as  
 16      the best means of overcoming technical challenges  
 17      that span multiple academic disciplines and  
 18      leveraging scarce Federal research funds.

19      “(c) ELIGIBLE ENTITIES.—

20          “(1) IN GENERAL.—To be eligible for a grant,  
 21      contract, or assistance under this section, an appli-  
 22      cant shall be—

23           “(A) a college or university;

24           “(B) a national laboratory;

25           “(C) a Federal research agency;

1           ~~“(D) a State research agency;~~

2           ~~“(E) a private sector entity; or~~

3           ~~“(F) a consortium of 2 or more entities de-~~  
 4           ~~scribed in subparagraphs (A) through (E).~~

5           ~~“(2) ADMINISTRATION.—After consultation~~  
 6           ~~with the Board, the points of contact shall—~~

7           ~~“(A) publish annually a joint request for~~  
 8           ~~proposals for grants, contracts, and assistance~~  
 9           ~~under this section;~~

10          ~~“(B) provide a preference in grants, con-~~  
 11          ~~tracts, and assistance under this section to con-~~  
 12          ~~sortia involving experts from multiple institu-~~  
 13          ~~tions and multiple academic disciplines working~~  
 14          ~~on cross-cutting or integrative research, devel-~~  
 15          ~~opment, and demonstration challenges; and~~

16          ~~“(C) require that grants, contracts, and~~  
 17          ~~assistance under this section be awarded com-~~  
 18          ~~petitively after the establishment of procedures~~  
 19          ~~that provide for scientific peer review by an~~  
 20          ~~independent panel of scientific and technical~~  
 21          ~~peers.~~

22          ~~“(d) USES OF GRANTS, CONTRACTS, AND ASSIST-~~  
 23          ~~ANCE.—A grant, contract, or assistance under this section~~  
 24          ~~shall be used to conduct—~~

1           “(1) research on process technology for over-  
 2           coming the recalcitrance of biomass, including re-  
 3           search on key mechanisms, advanced technologies,  
 4           and demonstration test beds for—

5           “(A) feedstock pretreatment and hydrolysis  
 6           of cellulose and hemicellulose, including new  
 7           technologies for—

8           “(i) enhanced sugar yields;

9           “(ii) lower overall chemical use;

10          “(iii) less costly materials; and

11          “(iv) cost reduction;

12          “(B) novel organism development and cel-  
 13          lulose production, including consolidated bio-  
 14          processing techniques; and

15          “(C) approaches other than enzymatic hy-  
 16          drolysis for overcoming the recalcitrance of cel-  
 17          lulosic biomass;

18          “(2) research on technologies for diversifying  
 19          the range of products that can be efficiently and  
 20          cost-competitively produced from biomass, including  
 21          research on—

22          “(A) metabolic engineering of biological  
 23          systems (including genetically modified crops)  
 24          to produce novel products, especially commodity  
 25          products, or to increase product selectivity and

1 tolerance, with a research priority on the devel-  
 2 opment of biobased products that can compete  
 3 in performance and cost with fossil-based prod-  
 4 ucts;

5 “(B) catalytic processing to convert inter-  
 6 mediates of biomass processing into products of  
 7 interest;

8 “(C) separation technologies for cost-effec-  
 9 tive product recovery and purification;

10 “(D) approaches other than metabolic en-  
 11 gineering and catalytic conversion of intermedi-  
 12 ates of biomass processing; and

13 “(E) advanced technologies for biomass  
 14 gasification and related research in turbine and  
 15 stationary fuel cell technology for production of  
 16 electricity from biomass and related research in  
 17 advanced turbine and stationary fuel cell tech-  
 18 nology; and

19 “(3) research aimed at evaluating the sustain-  
 20 ability and economic viability of biobased industrial  
 21 products and their raw material input of biomass;  
 22 including research on—

23 “(A) the evaluation of, and strategies to  
 24 enhance, the sustainability of biomass-based

1 production of fuels and commodity chemicals;  
 2 including research on—

3 “(i) accurate measurement and anal-  
 4 ysis of carbon sequestration and carbon cy-  
 5 cling in relation to biobased industrial  
 6 products and feedstocks;

7 “(ii) crops that provide a sustainable  
 8 resource for conversion to industrial prod-  
 9 ucts while also serving as a source for  
 10 other needs such as food or animal feed;

11 “(iii) development and analysis of best  
 12 land management practices that enhance  
 13 the environmental sustainability of the pro-  
 14 duction and harvesting of biomass;

15 “(iv) development of biomass cropping  
 16 systems that improve the conservation and  
 17 use of marginal land; and

18 “(v) biomass gasification and combus-  
 19 tion to produce electricity; and

20 “(B) the evaluation of, and strategies to  
 21 enhance, the economic viability of fuels and  
 22 commodity chemicals produced from biomass;  
 23 including research on—

24 “(i) the evaluation of the energy bal-  
 25 ances for biorefineries;

1                   “(ii) the cost of the required process  
2                   technology; and

3                   “(iii) the impact of coproduction on  
4                   product price and large-scale economic via-  
5                   bility.

6       “(e) AUTHORIZATION OF APPROPRIATIONS.—

7               “(1) IN GENERAL.—In addition to any other  
8       amounts that are authorized to be appropriated,  
9       there are authorized to be appropriated to carry out  
10      this section \$49,000,000 for each of fiscal years  
11      2000 through 2005.

12              “(2) RESEARCH ON CELLULOSIC BIOMASS.—

13      For each fiscal year, of the amounts that are made  
14      available under paragraph (1), not less than 30 per-  
15      cent shall be used to conduct research described in  
16      subsection (d)(1).

17   **“SEC. 1490E. ADMINISTRATIVE SUPPORT AND FUNDS.**

18              “(a) IN GENERAL.—To the extent administrative  
19      support and funds are not provided by other agencies  
20      under subsection (b), the Secretary of Energy shall pro-  
21      vide such administrative support and funds of the Depart-  
22      ment of Energy to the Board and the Advisory Committee  
23      as are necessary to enable the Board and the Advisory  
24      Committee to carry out this subtitle.

1       “(b) OTHER AGENCIES.—The Secretary of Agri-  
 2 culture and the heads of the agencies referred to in section  
 3 1490B(a)(3) may, and are encouraged to, provide admin-  
 4 istrative support and funds of their respective agencies to  
 5 the Board and the Advisory Committee.

6       **“SEC. 1490F. REPORTS.**

7       “For each fiscal year that funds are made available  
 8 to carry out this subtitle, the Secretary of Agriculture and  
 9 the Secretary of Energy shall jointly transmit to Congress  
 10 a detailed report on—

11               “(1) the status and progress of the Initiative;  
 12 including a certification from the Board that funds  
 13 authorized for the Initiative are distributed and used  
 14 in a manner that is consistent with the goals of the  
 15 Initiative; and

16               “(2) the general status of cooperation and re-  
 17 search efforts carried out by each Secretary with re-  
 18 spect to sustainable fuels, chemicals, and electricity  
 19 derived from biomass, including a certification from  
 20 the Board that the points of contact are funding  
 21 proposals that are selected on the basis of merit, as  
 22 determined by an independent panel of scientific and  
 23 technical peers.”.

1 **SECTION 1. SHORT TITLE.**

2       *This Act may be cited as the “National Sustainable*  
3 *Fuels and Chemicals Act of 1999”.*

4 **SEC. 2. FINDINGS.**

5       *Congress finds that—*

6           *(1) conversion of biomass into biobased indus-*  
7 *trial products offers outstanding potential for benefit*  
8 *to the national interest through improved strategic se-*  
9 *curity and balance of payments, healthier rural*  
10 *economies, improved environmental quality, near-zero*  
11 *net greenhouse gas emissions, technology export, and*  
12 *sustainable resource supply;*

13           *(2)(A) biomass is widely available at prices that*  
14 *are competitive with low cost petroleum; and*

15           *(B) the key technical challenges to be overcome in*  
16 *order for biobased industrial products to be cost com-*  
17 *petitive are finding new technology and reducing the*  
18 *cost of technology for converting biomass into desired*  
19 *biobased industrial products;*

20           *(3) biobased fuels, such as ethanol, have the clear*  
21 *potential to be sustainable, low cost, and high per-*  
22 *formance fuels that are compatible with both current*  
23 *and future transportation systems and provide near*  
24 *zero net greenhouse gas emissions;*

25           *(4) biobased chemicals—*

1           (A) can provide functional replacements for  
 2           essentially all organic chemicals that are cur-  
 3           rently derived from petroleum; and

4           (B) have the clear potential for environ-  
 5           mentally benign product life cycles;

6           (5) biobased power can provide environmental  
 7           benefits, promote rural economic development, and di-  
 8           versify energy resource options;

9           (6) many biomass feedstocks suitable for indus-  
 10          trial processing show the clear potential for sustain-  
 11          able production, in some cases resulting in improved  
 12          soil fertility and carbon sequestration;

13          (7)(A) grain processing mills are biorefineries  
 14          that produce a diversity of useful food, chemical, feed,  
 15          and fuel products; and

16          (B) technologies that result in further diversifica-  
 17          tion of the range of value-added biobased industrial  
 18          products can meet a key need for the grain processing  
 19          industry;

20          (8)(A) cellulosic feedstocks are attractive because  
 21          of their low cost and widespread availability; and

22          (B) research resulting in cost-effective technology  
 23          to overcome the recalcitrance of cellulosic biomass  
 24          would allow biorefineries to produce fuels and bulk  
 25          chemicals on a very large scale, with a commen-

1       surately large realization of the benefit described in  
2       paragraph (1);

3               (9) research into the fundamentals to understand  
4       important mechanisms of biomass conversion can be  
5       expected to accelerate the application and advance-  
6       ment of biomass processing technology by—

7                       (A) increasing the confidence and speed  
8       with which new technologies can be scaled up;  
9       and

10                      (B) giving rise to processing innovations  
11       based on new knowledge;

12               (10) the added utility of biobased industrial  
13       products developed through improvements in proc-  
14       essing technology would encourage the design of feed-  
15       stocks that would meet future needs more effectively;

16               (11) the creation of value-added biobased indus-  
17       trial products would create new jobs in construction,  
18       manufacturing, and distribution, as well as new high-  
19       er-valued exports of products and technology;

20               (12)(A) because of the relatively short-term time  
21       horizon characteristic of private sector investments,  
22       and because many benefits of biomass processing are  
23       in the national interest, it is appropriate for the Fed-  
24       eral Government to provide precommercial investment

1       *in fundamental research and research-driven innova-*  
 2       *tion in the biomass processing area; and*

3               *(B) such an investment would provide a valuable*  
 4       *complement to ongoing and past governmental sup-*  
 5       *port in the biomass processing area; and*

6               *(13) several prominent studies, including studies*  
 7       *by the President’s Council of Advisors on Science and*  
 8       *Technology and the National Research Council—*

9               *(A) support the potential for large research-*  
 10       *driven advances in technologies for production of*  
 11       *biobased industrial products as well as associ-*  
 12       *ated benefits; and*

13               *(B) document the need for a focused, inte-*  
 14       *grated, and innovation-driven research effort to*  
 15       *provide the appropriate progress in a timely*  
 16       *manner.*

17       **SEC. 3. CONVERSION OF BIOMASS INTO BIOBASED INDUS-**  
 18       **TRIAL PRODUCTS.**

19       *The National Agricultural Research, Extension, and*  
 20       *Teaching Policy Act of 1977 (7 U.S.C. 3101 et seq.) is*  
 21       *amended by adding at the end the following:*

22       **“Subtitle N—Conversion of Biomass**  
 23       **Into Biobased Industrial Products**

24       **“SEC. 1490. DEFINITIONS.**

25       *“In this subtitle:*

1           “(1) *ADVISORY COMMITTEE.*—The term ‘Advi-  
2       sory Committee’ means the Sustainable Fuels and  
3       Chemicals Technical Advisory Committee established  
4       by section 1490C.

5           “(2) *BIOBASED INDUSTRIAL PRODUCT.*—The  
6       term ‘biobased industrial product’ means any power,  
7       fuel, feed, chemical product, or other consumer good  
8       derived from biomass.

9           “(3) *BIOMASS.*—The term ‘biomass’ means any  
10      organic matter that is available on a renewable or re-  
11      curring basis (excluding old growth timber), includ-  
12      ing dedicated energy crops and trees, wood and wood  
13      residues, plants (including aquatic plants), grasses,  
14      agricultural crops, residues, fibers, and animal wastes  
15      and other waste materials.

16          “(4) *BOARD.*—The term ‘Board’ means the Sus-  
17      tainable Fuels and Chemicals Board established by  
18      section 1490B.

19          “(5) *INITIATIVE.*—The term ‘Initiative’ means  
20      the Sustainable Fuels and Chemicals Research Initia-  
21      tive established under section 1490D.

22          “(6) *POINT OF CONTACT.*—The term ‘point of  
23      contact’ means a point of contact designated under  
24      section 1490A(d).

1           “(7) *PROCESSING*.—The term ‘processing’ means  
2       the derivation of biobased industrial products from  
3       biomass, including—

4                   “(A) feedstock production;

5                   “(B) harvest and handling;

6                   “(C) pretreatment or thermochemical proc-  
7       essing;

8                   “(D) fermentation;

9                   “(E) catalytic processing;

10                  “(F) product recovery; and

11                  “(G) coproduct production.

12   **“SEC. 1490A. COOPERATION AND COORDINATION IN SUS-**  
13                   **TAINABLE FUELS AND CHEMICALS RE-**  
14                   **SEARCH.**

15       “(a) *IN GENERAL*.—The Secretary of Agriculture and  
16   the Secretary of Energy shall cooperate with respect to, and  
17   coordinate, policies and procedures that promote research  
18   and development leading to the production of biobased in-  
19   dustrial products.

20       “(b) *PURPOSE*.—The purpose of the cooperation and  
21   coordination shall be to—

22                  “(1) understand the key mechanisms underlying  
23       the recalcitrance of biomass for conversion into  
24       biobased industrial products;

1           “(2) develop new and cost-effective technologies  
2           that would result in large-scale commercial produc-  
3           tion of low cost and sustainable biobased industrial  
4           products;

5           “(3) ensure that biobased industrial products are  
6           developed in a manner that enhances their economic,  
7           energy security, and environmental benefits; and

8           “(4) promote the development and use of agricul-  
9           tural and energy crops for conversion into biobased  
10          industrial products.

11          “(c) AREAS.—In carrying out this subtitle, the Sec-  
12         retary of Agriculture and the Secretary of Energy, in con-  
13         sultation with heads of appropriate departments and agen-  
14         cies, shall promote research and development to—

15                 “(1) advance the availability and widespread use  
16                 of energy efficient, economically competitive, and en-  
17                 vironmentally sound biobased industrial products in  
18                 a manner that is consistent with the goals of the  
19                 United States relating to sustainable and secure sup-  
20                 plies of food, chemicals, and fuel;

21                 “(2) ensure full consideration of Federal land  
22                 and land management programs as potential feed-  
23                 stock resources for biobased industrial products; and

1           “(3) *assess the environmental, economic, and so-*  
 2           *cial impact of production of biobased industrial prod-*  
 3           *ucts from biomass on a large scale.*

4           “(d) *POINTS OF CONTACT.*—

5           “(1) *IN GENERAL.*—*To coordinate research and*  
 6           *development programs and activities relating to*  
 7           *biobased industrial products that are carried out by*  
 8           *their respective Departments—*

9           “(A) *the Secretary of Agriculture shall des-*  
 10           *ignate, as the point of contact for the Depart-*  
 11           *ment of Agriculture, an officer of the Department*  
 12           *of Agriculture appointed by the President to a*  
 13           *position in the Department before the date of the*  
 14           *designation, by and with the advice and consent*  
 15           *of the Senate; and*

16           “(B) *the Secretary of Energy shall des-*  
 17           *ignate, as the point of contact for the Depart-*  
 18           *ment of Energy, an officer of the Department of*  
 19           *Energy appointed by the President to a position*  
 20           *in the Department before the date of the designa-*  
 21           *tion, by and with the advice and consent of the*  
 22           *Senate.*

23           “(2) *DUTIES.*—*The points of contact shall*  
 24           *jointly—*

1           “(A) assist in arranging interlaboratory  
2           and site-specific supplemental agreements for re-  
3           search, development, and demonstration projects  
4           relating to biobased industrial products;

5           “(B) serve as cochairpersons of the Board;

6           “(C) administer the Initiative; and

7           “(D) respond in writing to each rec-  
8           ommendation of the Advisory Committee made  
9           under section 1490C(c)(2).

10   **“SEC. 1490B. SUSTAINABLE FUELS AND CHEMICALS BOARD.**

11       “(a) *ESTABLISHMENT.*—There is established the Sus-  
12   tainable Fuels and Chemicals Board to coordinate pro-  
13   grams within and among departments and agencies of the  
14   Federal Government for the purpose of promoting the use  
15   of biobased industrial products by—

16       “(1) maximizing the benefits deriving from Fed-  
17   eral grants and assistance; and

18       “(2) bringing coherence to Federal strategic  
19   planning.

20       “(b) *MEMBERSHIP.*—The Board shall consist of:

21       “(1) The point of contact of the Department of  
22   Agriculture designated under section 1490A(d)(1)(A),  
23   who shall serve as cochairperson of the Board.

1           “(2) *The point of contact of the Department of*  
 2           *Energy designated under section 1490A(d)(1)(B), who*  
 3           *shall serve as cochairperson of the Board.*

4           “(3) *A senior officer of each of the following*  
 5           *agencies who is appointed by the head of the agency*  
 6           *and who has a rank that is equivalent to the points*  
 7           *of contact:*

8                     “(A) *The Department of the Interior.*

9                     “(B) *The Environmental Protection Agency.*

10                    “(C) *The National Science Foundation.*

11                    “(D) *The Office of Science and Technology*  
 12                    *Policy.*

13           “(4) *At the option of the Secretary of Agriculture*  
 14           *and the Secretary of Energy, other members ap-*  
 15           *pointed by the Secretaries (after consultation with*  
 16           *members described in paragraphs (1) through (3)).*

17           “(c) *DUTIES.—The Board shall—*

18                     “(1) *coordinate research, development, and dem-*  
 19                     *onstration activities relating to biobased industrial*  
 20                     *products—*

21                     “(A) *between the Department of Agriculture*  
 22                     *and the Department of Energy; and*

23                     “(B) *with other departments and agencies*  
 24                     *of the Federal Government; and*

1           “(2) *provide recommendations to the points of*  
2           *contact concerning administration of this subtitle.*

3           “(d) *FUNDING.—Each agency represented on the*  
4           *Board is encouraged to provide funds for any purpose*  
5           *under this subtitle.*

6           “(e) *MEETINGS.—The Board shall meet at least quar-*  
7           *terly to enable the Board to carry out the duties of the*  
8           *Board under subsection (c).*

9           **“SEC. 1490C. SUSTAINABLE FUELS AND CHEMICALS TECH-**  
10           **NICAL ADVISORY COMMITTEE.**

11           “(a) *ESTABLISHMENT.—There is established the Sus-*  
12           *tainable Fuels and Chemicals Technical Advisory Com-*  
13           *mittee to—*

14           “(1) *advise the Secretary of Agriculture, the Sec-*  
15           *retary of Energy, and the points of contact*  
16           *concerning—*

17           “(A) *the technical focus and direction of re-*  
18           *quests for proposals issued under the Initiative;*  
19           *and*

20           “(B) *procedures for reviewing and evalu-*  
21           *ating the proposals;*

22           “(2) *facilitate consultations and partnerships*  
23           *among Federal and State agencies, agricultural pro-*  
24           *ducers, industry, consumers, the research community,*

1       *and other interested groups to carry out program ac-*  
 2       *tivities relating to the Initiative; and*

3               *“(3) evaluate and perform strategic planning on*  
 4       *program activities relating to the Initiative.*

5       *“(b) MEMBERSHIP.—The Committee shall consist of*  
 6       *the following members appointed by the points of contact:*

7               *“(1) An individual affiliated with the biobased*  
 8       *industrial products industry.*

9               *“(2) An individual affiliated with a college or*  
 10       *university who has expertise in biobased industrial*  
 11       *products.*

12               *“(3) 2 prominent engineers or scientists from*  
 13       *government or academia who have expertise in*  
 14       *biobased industrial products.*

15               *“(4) An individual affiliated with a commodity*  
 16       *trade association.*

17               *“(5) An individual affiliated with an environ-*  
 18       *mental or conservation organization.*

19               *“(6) An individual associated with State govern-*  
 20       *ment who has expertise in biobased industrial prod-*  
 21       *ucts.*

22               *“(7) At the option of the points of contact, other*  
 23       *members.*

24       *“(c) DUTIES.—The Advisory Committee shall—*

1           “(1) advise the points of contact with respect to  
2       the Initiative; and

3           “(2) evaluate whether, and make recommenda-  
4       tions in writing to the Board to ensure that—

5           “(A) funds authorized for the Initiative are  
6       distributed and used in a manner that is con-  
7       sistent with the goals of the Initiative;

8           “(B) the points of contact are funding pro-  
9       posals under this subtitle that are selected on the  
10      basis of merit, as determined by an independent  
11      panel of scientific and technical peers; and

12          “(C) activities under this subtitle are car-  
13      ried out in accordance with this subtitle.

14          “(d) MEETINGS.—The Advisory Committee shall meet  
15      at least quarterly to enable the Advisory Committee to carry  
16      out the duties of the Advisory Committee under subsection  
17      (c).

18      **“SEC. 1490D. SUSTAINABLE FUELS AND CHEMICALS RE-**  
19                              **SEARCH INITIATIVE.**

20          “(a) IN GENERAL.—The Secretary of Agriculture and  
21      the Secretary of Energy, acting through their respective  
22      points of contact and in consultation with the Board, shall  
23      establish and carry out a Sustainable Fuels and Chemicals  
24      Research Initiative under which competitively-awarded  
25      grants, contracts, and financial assistance are provided to,

1 *or entered into with, eligible entities to carry out research*  
 2 *on biobased industrial products.*

3 “(b) *PURPOSES.—The purposes of grants, contracts,*  
 4 *and assistance under this section shall be to—*

5 “(1) *stimulate collaborative activities by a di-*  
 6 *verse range of experts in all aspects of biomass proc-*  
 7 *essing for the purpose of conducting fundamental and*  
 8 *innovation-targeted research and technology develop-*  
 9 *ment;*

10 “(2) *enhance creative and imaginative ap-*  
 11 *proaches toward biomass processing that will serve to*  
 12 *develop the next generation of advanced technologies*  
 13 *making possible low cost and sustainable biobased in-*  
 14 *dustrial products;*

15 “(3) *strengthen the intellectual resources of the*  
 16 *United States through the training and education of*  
 17 *future scientists, engineers, managers, and business*  
 18 *leaders in the field of biomass processing; and*

19 “(4) *promote integrated research partnerships*  
 20 *among colleges, universities, national laboratories,*  
 21 *Federal and State research agencies, and the private*  
 22 *sector as the best means of overcoming technical chal-*  
 23 *lenges that span multiple research and engineering*  
 24 *disciplines and of gaining better leverage from limited*  
 25 *Federal research funds.*

1       “(c) *ELIGIBLE ENTITIES.*—

2               “(1) *IN GENERAL.*—*To be eligible for a grant,*  
3       *contract, or assistance under this section, an appli-*  
4       *cant shall be—*

5               “(A) *a college or university;*

6               “(B) *a national laboratory;*

7               “(C) *a Federal research agency;*

8               “(D) *a State research agency;*

9               “(E) *a private sector entity;*

10              “(F) *a nonprofit organization; or*

11              “(G) *a consortium of 2 or more entities de-*  
12       *scribed in subparagraphs (A) through (E).*

13              “(2) *ADMINISTRATION.*—*After consultation with*  
14       *the Board, the points of contact, on behalf of the*  
15       *Board, shall—*

16              “(A) *publish annually 1 or more joint re-*  
17       *quests for proposals for grants, contracts, and as-*  
18       *istance under this section;*

19              “(B) *establish a priority in grants, con-*  
20       *tracts, and assistance under this section for re-*  
21       *search that—*

22              “(i) *demonstrates potential for signifi-*  
23       *cant advances in biomass processing;*

24              “(ii) *demonstrates potential to substan-*  
25       *tially impact scale-sensitive national objec-*

1            *tives such as sustainable resource supply,*  
 2            *reduced greenhouse gas emissions, healthier*  
 3            *rural economies, and improved strategic se-*  
 4            *curity and trade balances; and*

5            *“(iii) would improve knowledge of im-*  
 6            *portant biomass processing systems that*  
 7            *demonstrate potential for commercial appli-*  
 8            *cations;*

9            *“(C) require that grants, contracts, and as-*  
 10          *sistance under this section be awarded competi-*  
 11          *tively, on the basis of merit, after the establish-*  
 12          *ment of procedures that provide for scientific*  
 13          *peer review by an independent panel of scientific*  
 14          *and technical peers; and*

15          *“(D) give preference to applications that—*

16                  *“(i) involve a consortia of experts from*  
 17                  *multiple institutions; and*

18                  *“(ii) encourage the integration of dis-*  
 19                  *ciplines and application of the best tech-*  
 20                  *nical resources.*

21          *“(d) USES OF GRANTS, CONTRACTS, AND ASSIST-*  
 22          *ANCE.—A grant, contract, or assistance under this section*  
 23          *shall be used to conduct—*

24                  *“(1) research on process technology for over-*  
 25                  *coming the recalcitrance of biomass, including re-*

1        *search on key mechanisms, advanced technologies, and*  
 2        *demonstration test beds for—*

3                *“(A) feedstock pretreatment and hydrolysis*  
 4                *of cellulose and hemicellulose, including new*  
 5                *technologies for—*

6                        *“(i) enhanced sugar yields;*

7                        *“(ii) lower overall chemical use;*

8                        *“(iii) less costly materials; and*

9                        *“(iv) cost reduction;*

10                *“(B) development of novel organisms and*  
 11                *other approaches to substantially lower the cost*  
 12                *of cellulase enzymes and enzymatic hydrolysis,*  
 13                *including dedicated cellulase production and*  
 14                *consolidated bioprocessing strategies; and*

15                *“(C) approaches other than enzymatic hy-*  
 16                *drolysis for overcoming the recalcitrance of cel-*  
 17                *lulosic biomass;*

18                *“(2) research on technologies for diversifying the*  
 19                *range of products that can be efficiently and cost-com-*  
 20                *petitively produced from biomass, including research*  
 21                *on—*

22                *“(A) metabolic engineering of biological sys-*  
 23                *tems (including the safe use of genetically modi-*  
 24                *fied crops) to produce novel products, especially*  
 25                *commodity products, or to increase product selec-*

1            *tivity and tolerance, with a research priority on*  
 2            *the development of biobased products that can*  
 3            *compete in performance and cost with fossil-*  
 4            *based products;*

5            *“(B) catalytic processing to convert inter-*  
 6            *mediates of biomass processing into products of*  
 7            *interest;*

8            *“(C) separation technologies for cost-effec-*  
 9            *tive product recovery and purification;*

10           *“(D) approaches other than metabolic engi-*  
 11           *neering and catalytic conversion of intermediates*  
 12           *of biomass processing;*

13           *“(E) advanced biomass gasification tech-*  
 14           *nologies, including coproduction of power and*  
 15           *heat as an integrated component of biomass*  
 16           *processing, with the possibility of generating ex-*  
 17           *cess electricity for sale; and*

18           *“(F) related research in advanced turbine*  
 19           *and stationary fuel cell technology for production*  
 20           *of electricity from biomass; and*

21           *“(3) research aimed at ensuring the environ-*  
 22           *mental performance and economic viability of*  
 23           *biobased industrial products and their raw material*  
 24           *input of biomass when considered as an integrated*  
 25           *system, including research on—*

1           “(A) the analysis of, and strategies to en-  
 2           hance, the environmental performance and sus-  
 3           tainability of biobased industrial products, in-  
 4           cluding research on—

5                   “(i) accurate measurement and anal-  
 6                   ysis of greenhouse gas emissions, carbon se-  
 7                   questration, and carbon cycling in relation  
 8                   to the life cycle of biobased industrial prod-  
 9                   ucts and feedstocks with respect to other al-  
 10                  ternatives;

11                  “(ii) evaluation of current and future  
 12                  biomass resource availability;

13                  “(iii) development and analysis of  
 14                  land management practices and alternative  
 15                  biomass cropping systems that ensure the  
 16                  environmental performance and sustain-  
 17                  ability of biomass production and har-  
 18                  vesting;

19                  “(iv) land, air, water, and biodiversity  
 20                  impacts of large-scale biomass production,  
 21                  processing, and use of biobased industrial  
 22                  products relative to other alternatives; and

23                  “(v) biomass gasification and combus-  
 24                  tion to produce electricity;

1           “(B) the analysis of, and strategies to en-  
 2           hance, the economic viability of biobased indus-  
 3           trial products, including research on—

4                   “(i) the cost of the required process  
 5                   technology;

6                   “(ii) the impact of coproducts, includ-  
 7                   ing power and heat generation, on biobased  
 8                   industrial product price and large-scale eco-  
 9                   nomic viability; and

10                  “(iii) interactions between an emergent  
 11                  biomass refining industry and the petro-  
 12                  chemical refining infrastructure; and

13           “(C) the field and laboratory research re-  
 14           lated to feedstock production with the inter-  
 15           related goals of enhancing the sustainability, in-  
 16           creasing productivity, and decreasing the cost of  
 17           biomass processing, including research on—

18                   “(i) altering biomass to make biomass  
 19                   easier and less expensive to process;

20                   “(ii) existing and new agricultural  
 21                   and energy crops that provide a sustainable  
 22                   resource for conversion to biobased indus-  
 23                   trial products while simultaneously serving  
 24                   as a source for coproducts such as food, ani-  
 25                   mal feed, and fiber;

1                   “(iii) improved technologies for har-  
 2 vest, collection, transport, storage, and han-  
 3 dling of crop and residue feedstocks; and

4                   “(iv) development of economically via-  
 5 ble cropping systems that improve the con-  
 6 servation and restoration of marginal land.

7           “(e) *AUTHORIZATION OF APPROPRIATIONS.*—In addi-  
 8 tion to any other amounts that are authorized to be appro-  
 9 priated, there are authorized to be appropriated to carry  
 10 out this section \$49,000,000 for each of fiscal years 2000  
 11 through 2005.

12   **“SEC. 1490E. ADMINISTRATIVE SUPPORT AND FUNDS.**

13           “(a) *IN GENERAL.*—To the extent administrative sup-  
 14 port and funds are not provided by other agencies under  
 15 subsection (b), the Secretary of Energy shall provide such  
 16 administrative support and funds of the Department of En-  
 17 ergy to the Board and the Advisory Committee as are nec-  
 18 essary to enable the Board and the Advisory Committee to  
 19 carry out this subtitle.

20           “(b) *OTHER AGENCIES.*—The Secretary of Agriculture  
 21 and the heads of the agencies referred to, or appointed  
 22 under, paragraphs (3) and (4) of section 1490B(a) may,  
 23 and are encouraged to, provide administrative support and  
 24 funds of their respective agencies to the Board and the Advi-  
 25 sory Committee.

1 **“SEC. 1490F. REPORTS.**

2       *“For each fiscal year that funds are made available*  
 3 *to carry out this subtitle, the Secretary of Agriculture and*  
 4 *the Secretary of Energy shall jointly transmit to Congress*  
 5 *a detailed report on—*

6           *“(1) the status and progress of the Initiative, in-*  
 7 *cluding a certification from the Board that funds au-*  
 8 *thorized for the Initiative are distributed and used in*  
 9 *a manner that is consistent with the goals of the Ini-*  
 10 *tiative; and*

11           *“(2) the general status of cooperation and re-*  
 12 *search efforts carried out by each Secretary with re-*  
 13 *spect to sustainable fuels, chemicals, and electricity*  
 14 *derived from biomass, including a certification from*  
 15 *the Board that the points of contact are funding pro-*  
 16 *posals that are selected on the basis of merit, as deter-*  
 17 *mined by an independent panel of scientific and tech-*  
 18 *nical peers.*

19 **“SEC. 1490G. AUTHORIZATION OF APPROPRIATIONS FOR**  
 20 **ETHANOL RESEARCH PILOT PLANT.**

21       *“There are authorized to be appropriated to construct*  
 22 *a Department of Agriculture corn-based ethanol research*  
 23 *pilot plant a total of \$14,000,000 for fiscal year 2000 and*  
 24 *subsequent fiscal years.”.*

1 **SEC. 4. USE OF CONSERVATION RESERVE LAND FOR RE-**  
 2 **COVERY OF BIOMASS USED IN ENERGY PRO-**  
 3 **DUCTION.**

4 *Section 1232(a)(7) of the Food Security Act of 1985*  
 5 *(16 U.S.C. 3832(a)(7)) is amended—*

6 *(1) by striking “except that the Secretary may*  
 7 *permit harvesting” and inserting “except that the*  
 8 *Secretary—*

9 *“(A) may permit—*

10 *“(i) harvesting”;*

11 *(2) by striking “emergency, and the Secretary*  
 12 *may permit limited” and inserting “emergency; and*

13 *“(ii) limited”;*

14 *(3) by inserting “and” after the semicolon at the*  
 15 *end; and*

16 *(4) by adding at the end the following:*

17 *“(B) shall approve not more than 18*  
 18 *projects under which crops on land subject to the*  
 19 *contract may be harvested for recovery of bio-*  
 20 *mass used in energy production if—*

21 *“(i) no acreage subject to the contract*  
 22 *is harvested more than once every other*  
 23 *year;*

24 *“(ii) not more than 25 percent of the*  
 25 *total acreage enrolled in the program under*  
 26 *this subchapter in any crop reporting dis-*

1            *strict (as designated by the Secretary), is*  
2            *harvested in any 1 year;*

3            *“(iii) no portion of the crop is used for*  
4            *any commercial purpose other than energy*  
5            *production from biomass;*

6            *“(iv) no wetland, or acreage of any*  
7            *type enrolled in a partial field conservation*  
8            *practice (including riparian forest buffers,*  
9            *filter strips, and buffer strips), is harvested;*

10           *“(v) the owner or operator agrees to a*  
11           *payment reduction under this section in an*  
12           *amount determined by the Secretary;*

13           *“(vi) the owner or operator agrees to*  
14           *commission and submit to the Secretary a*  
15           *study and report, to be conducted and writ-*  
16           *ten by a third party approved by the Sec-*  
17           *retary, on the impact of the biomass pro-*  
18           *duction and harvesting on wildlife; and*

19           *“(vii) the owner or operator agrees to*  
20           *such other terms and conditions as the Sec-*  
21           *retary, in consultation with the State tech-*  
22           *nical committee for the State and appro-*  
23           *priate conservation and wildlife advocates,*  
24           *may establish to ensure that the production*  
25           *and harvesting of biomass crops minimize*

1                   *disturbance of wildlife habitat and are oth-*  
2                   *erwise consistent with the purposes of the*  
3                   *program established under this subchapter,*  
4                   *with any biomass harvesting project per-*  
5                   *mitted to harvest at least 50,000 acres per*  
6                   *year.”.*